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Policy Priorities to Support Ghana's Commercial Seed Sector Development

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INTRODUCTION

This paper is an attempt to provide initial discussion points that may be useful in considering the types of policies that can support the development of Ghana's commercial seed sector. Several motivations for reviewing Ghana's commercial seed sector have recently emerged:

- A new seed law has been enacted (Plants and Fertilizer Act 2010).
- The associated regulations have been written and await final approval.
- A National Seed Council has been appointed
- Several donor efforts are in place and others are in the pipeline to support the use of commercial seed.
- A handful of small, domestic seed companies have recently emerged
- Use of imported commercial seed has increased.
- A new seed subsidy program has been established.

This paper is based on published studies, secondary data, and more than two weeks of field work interviewing various public and private actors in the seed sector. The report meant to generate discussion and debate and will be followed by a more detailed paper later this year.

The paper begins with an outline of the major features of Ghana's current commercial seed system. This is followed by the identification of several factors that determine the evolution of the formal seed system. The next section presents six policy priorities that should be considered. This is followed by a brief set of conclusions.

THE FORMAL SEED SYSTEM IN GHANA

This paper addresses Ghana's formal seed system for field crops, which consists of seven major elements.

1. VARIETIES

Most formal sector seed has thus far been based on crop varieties developed (usually with donor funding) by Ghana's national agricultural research institutes (NARIs) under the Council for Scientific and Industrial Research (CSIR). Much of this breeding has been done in conjunction with international agricultural research centers (IARCs) or other international plant breeding efforts. There are also a few instances of imported seed, particularly some maize hybrids from multinational companies (MNCs).

2. VARIETY APPROVAL AND REGISTRATION

Until now, the testing and approval of new varieties by a government variety release authority only considered NARI varieties, but the new law opens the field to both domestic and exotic private varieties and facilitates access to all public varieties.

3. SOURCE SEED

Source seed is the term used to describe all generations before commercial seed. For the purposes of this paper, the earliest generation is breeder seed and is produced by the NARI responsible for a particular variety. The next generation is foundation seed, and until recently this has been the responsibility of the Grains and Legumes Development Board (GLBD). The new law opens the way for other actors to produce foundation seed.

4. SEED PRODUCTION

Since the early 1990s, small-scale seed producers (individuals or small groups) have produced certified seed. More recently they have come together under the umbrella of the Seed Association of Ghana (SEEDPAG). The seed producers condition their seed in centralized, largely government-owned facilities, most of which are in very poor condition. The conditioning process includes cleaning, grading, and bagging. A number of small seed companies have recently emerged, but most of them are also dependent on these conditioning facilities.

5. SEED QUALITY CONTROL AND CERTIFICATION

The Ghana Seed Inspection Division (GSID) is part of the Plant Protection and Regulatory Services Directorate (PPRSD) of the Ministry of Food and Agriculture (MoFA). GSID has regional offices, and its inspectors visit fields and conditioning sites to undertake seed tests. The new law leaves the door open to alternative certification modalities, including the possibility of accrediting

seed companies to assume some responsibility for certification activities.6. Marketing

The small-scale producers usually establish agreements or contracts with one or more input dealers, who buy the seed for sale in their shops. Most of the new companies also sell through these input dealers, who are found throughout the country (Krausova and Banful 2010). There is also demand for seed from government programs such as Block Farms and various donor projects.

7. SEED UTILIZATION

Over the past five years, the average annual certified seed production has been 3,400 MT for maize and 1,600 MT for rice. Seed production for other crops is much lower (215 MT for soybean, 31 MT for cowpea, 6MT for groundnut, and 4 MT for sorghum). For most of these crops seed production is dominated by one or two varieties. One knowledgeable observer estimates that about 60 percent of this seed is sold, the remainder ending up in the grain market.

DETERMINANTS OF SEED SYSTEM DEVELOPMENT

In order to formulate policy it is useful to have a clear idea of the future dimensions and composition of Ghana's seed industry. Some of the major determinants of seed industry evolution depend on agronomic or economic factors. But there are enough unknowns to make such predictions risky. Four of the most important unknowns are briefly discussed here.

1. VARIETY PERFORMANCE

One of the major reasons farmers buy seed is to get access to a variety that increases productivity or income. Until now, there have been few examples of any rush for commercial seed. Certain traditional varieties have gradually established themselves because they are generally reliable. But for many crops, even if a farmer is using a modern variety (MV), she may not know its brand name or how to renew or replace it. For instance, many farmers using maize or cowpea MVs do not know their names (Morris et al. 1999; Tripp et al. 1998). The lack of variety adoption may be due to inadequate information or deficient seed supply. Another possibility is that MVs simply do not offer sufficient incentives for farmers to search for seed. Simple, uniform answers are not on the shelf, and in any case this is not the place to examine the possibilities. But it needs to be clearly stated that just because a new variety has been released, after having passed various official performance tests, there is no guarantee of demand by either farmers or the seed industry.

One example will suffice. In many countries hybrid maize has been the principal engine of growth of the seed industry, both because it requires annual seed purchase and the proven productivity of its superior yields (Tripp 2001). Until recently, Ghana's maize has virtually all been non-hybrid, open-pollinated varieties (OPVs). Several public hybrids are now being produced and promoted in small quantities, and several imported hybrids from MNCs have also become available. Evidence exists that certain hybrids, under adequate management, provide higher yields than OPVs (Sallah et al. 2007). However, there is less evidence regarding the most appropriate hybrids: How do the current domestic hybrids perform against the imported ones? To what extent will domestic private breeding replace the public sector? It is also unclear what proportion of Ghana's farmers will be able to provide or afford the fertilization, weed control, and other agronomic activities that make investment in hybrid seed worthwhile. That proportion will be a significant determinant of seed industry development.

2. SEED DEMAND

To continue with the previous example, the incentives for growing hybrid maize are not only linked to productivity but are also determined by the market and the price the farmer can expect for her output. Markets for food maize in Ghana are characterized by several levels of intermediaries and attendant inefficiencies, contributing to often low farmgate prices (Chamberlin et al. 2007). Maize is an important crop in Ghana, but not the principal dietary contributor of calories as it is in many eastern and southern African countries where hybrid maize is more commonly grown (Langyintuo et al. 2008).

It is unclear how the productivity gains of hybrid maize would play out in Ghana; how possible lower farmgate prices from a greater maize supply would be balanced by lower costs of production; or how improved maize productivity could instead save land and labor for other activities. But any improvements in market efficiency that pass a higher proportion of the final price to the producer and additional uses for maize would certainly make hybrid technology more attractive.

The importance of output markets in defining seed use in Ghana is illustrated by the fact that most commercial seed imports depend on linked contract schemes, where seed and other inputs are provided to farmers and their produce is purchased for sale in well-defined markets (e.g. yellow maize for feed, sorghum for breweries, packaged rice for middle class consumers). Thus the current incentives for commercial seed use on a large scale are tied to commodities that have well-functioning markets. The likelihood that farmers will be frequent consumers of a range of commercial seed products depends to a considerable extent on the nature and diversity of the available output markets. The degree to which Ghana can develop robust and efficient agricultural output markets is one of the primary factors that will determine seed demand and the evolution of the seed industry.

3. INDUSTRY STRUCTURE

Until very recently, virtually all of Ghana's commercial seed came from small-scale producers, often cultivating only a few hectares, who sold it on to input dealers (Lyon and Afikorah-Danquah1998). We might call this the "unconventional private sector". Over the past few years, more conventional seed companies have begun to appear. On the face of it, these would seem to have significant efficiency advantages, particularly in acquiring source seed, arranging for certification and conditioning, and marketing. One might predict that the small-scale producers would gradually fade away, many of them absorbed into the new structure as contract growers.

The extent to which this conversion of the unconventional to the conventional actually takes place, however, depends on several factors. Some of the new seed companies rely mostly on their own land for seed production, so at least until demand grows significantly, some of them may not require contract growers. In addition, the new companies are still slightly less than conventional because most of them still depend on ancient seed conditioning equipment traditionally used by small-scale producers. Some companies hope to acquire their own conditioning equipment, or that other people will acquire such facilities and rent them out. The type and distribution of seed conditioning equipment in the near future will help determine the efficiency of the two types of seed production.

In addition, we must acknowledge that the term "private sector" is a bit misleading, at least in the sense of something completely separated from public sector interests and activities. If we examine the current system, we find many instances where the line between public and private is difficult to trace. For instance, some public agricultural organizations produce or market seed, some seed producers take advantage of government programs that buy seed for their activities, and some farmers access source seed from public institutes through friendship or past connections. These types of linkages may be viewed as either creative facilitation or unwarranted cronyism, but they are some distance from the private sector usually envisioned in policy documents. The way these relations adjust and evolve in the coming years will help determine the structure of Ghana's domestic seed industry.

There are additional factors that will determine the extent to which a domestic private seed sector emerges. Despite general government support for privatization, public researchers, regulators, and others may protect their turf and be resentful of private activity that is seen to generate significant profits within a domain formerly within public sector control. There is growing donor interest in Ghana's private seed sector. This can be helpful, but large injections of additional donor funds may tip the balance from much needed capacity building to a temporary surfeit of loans, grants and privileges for aspiring entrepreneurs, impeding truly demand-led growth. The performance of, and demand for, imported seed products (hybrid maize and a few others) will also affect domestic seed industry development.

4. FOUNDATION SEED SUPPLY

A fourth unknown in assessing the future of Ghana's seed industry is the production of foundation seed. This may seem a relatively minor issue compared to the others but in a system that depends largely on public plant breeding and private seed production, foundation seed represents a link between public and private sectors. Decisions about who takes responsibility for foundation seed production will make a significant difference to the structure of the industry.

The new law allows several possibilities for producing foundation seed. NARIs can produce it but one can argue that producing large quantities of seed is neither within their mandate nor a good use of their resources. At the other extreme, companies can use breeder seed acquired from NARIs to produce the foundation seed they require. This strategy is being tested by some companies for maize hybrids, and in the case of a high-value product it is quite possible that the companies will be willing to adopt this strategy. For lower-value (non-hybrid) seed, however, it is an open question as to whether the companies will be willing to invest time and resources in producing a product they cannot sell but rather use as an input the following year. Another possibility is an intermediate organization that produces foundation seed and provides it (at cost recovery) to the commercial seed producers.

The idea of the intermediary is similar to the current situation with GLDB, but with important differences. An efficient intermediary requires shared governance from the seed industry, public breeding organizations, and the regulatory bodies (Tripp 2006). The inexperience of Ghana's current seed industry and questions about the incentives of public research and regulation make such an intermediary unlikely at the present time in Ghana. But reliance on government entities to produce foundation seed is usually associated with concerns about efficiency, responsiveness, and quality. Thus who will take responsibility for foundation seed in Ghana remains an open question, with the danger that it may become a missing link in the seed production chain, a key step that no one wishes to perform. This could limit access to seed, particularly for less commercially attractive crops or varieties.

POLICY PRIORITIES

Regardless of the outcomes from the unknowns discussed above, policymakers need to address several issues immediately if Ghana's commercial seed sector is to progress. Three of these issues are related to the implementation and enforcement of regula-

tions (for variety release, seed certification, and consumer protection) and come under the responsibility of the National Seed Council. The others concern breeder seed supply, information provision, and seed price.

VARIETY RELEASE

The new seed law establishes a Technical and Variety Release Committee that recommends crop varieties to be released. Such committees are standard features in most countries, but the real challenges involve the organization of variety testing, the financing of such testing, and the criteria used for approval. In many countries what appear to be straightforward procedures turn into unclear and drawn-out processes that seriously delay the seed production of new varieties.

Until recently, the only varieties considered for release were the products of the NARIs, who took responsibility for conducting multi-location tests and on-farm trials. The release committee visited trial sites and reviewed the data. With the possibility of domestic and foreign (private and public) varieties seeking release these procedures need to be reviewed. The few recent examples of testing such varieties seem to have been ad-hoc in their organization and funding. What is needed is a single, clearly marked doorway through which all applications (domestic and foreign) pass. Moreover, the entity in charge of trial management needs to be designated and made acceptable to all parties. Such variety testing requires funds for trial establishment and management and the charges for this testing must be transparent. It is likely that large, foreign seed companies will be willing to pay such charges, as will most donor-funded plant breeding projects, but a funding mechanism needs to be identified that does not restrict the testing of varieties to those promoted by wealthy sponsors. The National Seed Council needs to ensure that the variety release authority is not a complacent gatekeeper but rather one that is dedicated to bringing the best varieties to farmers.

Seed quality control and certification

The new seed law decrees that all field crop seed offered for sale must be certified. This obliges government inspectors to visit each seed production field several times during the cropping season, to be present when the seed bags are filled and sealed, and to draw samples for testing. Although the personnel and transport resources required to undertake these responsibilities are considerable, neither an estimate of the actual costs nor the funding source is currently available. Until now the service has been offered almost free of charge (although in practice seed producers often need to provide transport to the inspectors to visit fields), but proposals have been put forward to levy nominal fees. Reports from both sides of the regulatory process indicate that it is not always possible to complete all the duties required, although it appears that Ghana's commercial seed consumers have not been very demanding in terms of quality.

For the short term, the law seems to lock Ghana into mandatory certification, even as the country moves toward more conventional private sector activity where companies concern themselves with quality control to defend their reputations. Although the law foresees the possibility of accrediting seed companies to do much of their own quality control, this is unlikely to occur soon. In the meantime, someone needs to document the costs of maintaining a certification service—one that actually does all of the things listed in the regulations—and decide who pays what. Does it remain fully funded by government? Are nominal charges levied? Or is it to be managed at full cost recovery?

The future structure of the seed industry will have a bearing on the costs of certification. For instance, an increasing number of small-scale seed producers will add to travel costs for inspectors, while seed companies with their own (larger) fields or clustered contract growers will lower the regulatory costs per hectare. Similarly, an increasing number of seed conditioning facilities implies increased costs, although new facilities will surely contribute to seed quality, with or without inspection. Moreover, dispersed companies producing their own foundation seed could also increase total regulatory costs.

Various scenarios for meeting the certification requirements may be considered, but the first steps are to define the costs of regulation and to bridge the gap between regulatory requirements and resources. Realistically, there are limits to what can be done in the short term and it is best to identify priority areas for attention. Two of these are the certification of foundation seed (whose production will be more dispersed) and consumer protection. If the small companies prosper, they will handle much of the management (if not the legal responsibility) for ensuring the quality of commercial seed.

Consumer protection and education

Despite the very modest level of Ghana's current seed industry (and the low prices of its products) there are enough reports to conclude that market grain is frequently sold as seed. The standard plastic seed bags in use are easy enough to imitate, and a number of people, including some insiders, are reported to have profited from selling grain as packaged seed. At current volumes and price levels this may not a major concern, but as Ghana moves to higher-value seed products the threat will become more substantial, and unchecked activity could make farmers reluctant to buy expensive new seed.

The new law provides penalties for fraud, but how to identify the culprits? There are currently very few regulatory resources devoted to point-of-sale inspection and this needs to change. The extension service could also develop consumer education activi-

ties to support a growing seed market. Farmers need to become familiar with various seed products and companies so that they only buy from recognized dealers, and also to understand the procedures for reporting suspicion of fraudulent seed.

Breeder seed

As long as Ghana's seed industry depends on public crop varieties, the assurance of adequate quantities of good quality breeder seed is crucial. Until now, breeder seed production by the NARIs has been a hit-or-miss undertaking. Breeder seed may be available for a few major varieties, but for many crops breeder seed production is dependent on donor support. The previous system was to sell all breeder seed to GLDB at low cost on request, and to occasionally provide it to various individuals and entities without any clear policy for allocation. No system for setting deadlines for requests is yet in place and deposits are not yet required. Unless this situation changes, quantities of breeder seed might go unused and requests for breeder seed might go unmet.

The NARIs need to establish an absolutely transparent system where foundation seed producers make advance requests for breeder seed. The arrangement should be contractual and the NARI should have a designated manager of this activity, across crops. The seed should be sold at cost recovery or alternative arrangements should be in put in place to cover the costs where it is deemed to be in the public interest. To make this happen, someone needs to establish the actual costs of breeder seed production. Foundation seed producers who do not take delivery of breeder seed should lose their deposits and/or their place in line the following year, and NARIs that fail to meet their obligations should be penalized. Considering that breeder seed is the first crucial step in delivering the products of public agricultural research, there is no reason for CSIR to tolerate anything but excellent performance from its institutes on this issue.

Seed promotion and information

The average Ghanaian farmer knows very little about what varieties are potentially on offer in the formal seed system. Everyone seems to have an excuse for this situation. The NARIs say that promotion is not their mandate. The extension service says it has inadequate resources and often inadequate information from the NARIs. A seed producer or seed company is wary of investing in the promotion of a product sold by its competitors. Input merchants are provided with little information on which to base any kind of promotion. The result is that large amounts of government and donor money invested in plant breeding are wasted, with very little uptake of new technology.

Some changes can be expected. Certainly if imported seed products are brought to the market they will be supported with considerable promotion. The emerging domestic seed companies are trying to differentiate their products and some have aspirations of developing their own plant breeding capacity.

But as long as most seed is based on varieties from the NARIs there is an urgent need to provide better information and the responsibility will logically fall mostly upstream, with research and extension. Just as CSIR must insist that a viable system for breeder seed be established in the NARIs, it must also insist that the NARIs take a more proactive stance in promoting their varieties. This needs to be complemented by a much clearer extension strategy, linked in part to consumer education activities discussed above. Seed producers and merchants will surely be willing to do their part, but without a competent strategy from research and extension the demand for seed will be limited. In addition, any hopes that farmers will move towards hybrid maize requires a concerted effort to educate farmers on the nature of hybrid seed and its management.

It is unrealistic to propose large-scale public research and extension field activities in variety promotion; the budget is simply not available. But it is certainly possible to insist that the NARIs provide materials (posters, pamphlets, on-line resources) that others (extension, projects, NGOs, seed producers, merchants) can use in their own educational activities.

Seed price and subsidy

The price of seed in Ghana is low. Although there is no mandatory price, SEEDPAG participates in setting a standard price for seed each year. In most cases seed price is barely twice the price of market grain, which is about as low as can be expected. The little public hybrid maize on the market sells for 4-5 times the grain price, which is quite low by international standards (Smale and Olwande 2011).

In spite of these low prices, the government recently announced a subsidy on seed of maize (initially OPVs), rice, and soybean. The subsidy will reduce the price of maize and soybean seed by about 50 percent and rice seed by about 10 percent. If this is applied to the quantities of seed of these crops that have been produced (but not all sold) in recent years, the seed subsidy will cost the government more than US$1 million annually. The discussion in the earlier parts of this section describes activities that are more deserving of this money. But most of those activities are "behind the scenes" and do not provide visibility, while a subsidy allows MoFA to point to something they are doing directly for farmers.

The problem is that it is not clear that the seed subsidy accomplishes anything useful for farmers, or anyone else. The majority of it, at least initially, will be spent on lowering the price of OPV maize seed to close to grain price and the vast majority of this money will be spent on the most common variety in the seed system, Obatanpa, which is 20 years old and already the most common single variety in Ghana's maize fields.

A seed subsidy requires more careful consideration. State governments in India sometimes offer a small subsidy on seed of newly released varieties to encourage famers to switch. When the requirement for seed is urgent (for a disease-resistant variety, for instance) this might be offered at a subsidized rate. Or one might imagine some kind of promotion program for hybrid maize where education is combined with an introductory offer of lower-priced hybrid seed. But the allocation of scarce public resources to reducing the price of seed products that are already cheap and well-known to farmers, and are only in modest demand anyway, requires a second look.

CONCLUSIONS

It is important to understand that good seed is a means of improving productivity and not an end in itself. Thus any aspirations of increasing the use of certified seed or raising the seed replacement rate need to be backstopped by strong evidence of productivity gains. While it is important to examine the seed supply side, the demand side of the equation is crucial, and often overlooked. Demand is partly a function of the competence of agricultural research and the nature of agricultural output markets.

Although there is general agreement that further privatization is the way forward to meet any increased demand, such a shift will require a fairly radical shift in behavior and attitude. The current privatized system is characterized by complacency, comfortable relationships, and very modest output. The distinction between public and private players needs to be more obvious, and each side needs adequate incentives to perform its role.

The new regulations move Ghana only a few small steps toward an adequate seed system. Some of the most urgent tasks are related to implementation and enforcement, and much of this responsibility apparently falls on the shoulders of the new National Seed Council. Establishing a transparent variety release system, deciding how to match seed certification aspirations with resources, and ensuring consumer education and protection are three of the most important tasks. The Council is confronted by a huge task.

As long as the seed system is based mostly on public varieties, the CSIR institutes need a radical change in attitude and incentives. The actual uptake of varieties should be one of the primary measures for assessing an institute's performance. To achieve such uptake, the NARIs need to rethink their breeder seed production and to devote more attention to ensuring that adequate information is available for seed growers and farmers.

External donor support may provide needed capacities to meet some of these objectives, but the major responsibility is with national policymakers. Supporting the development of a national seed sector will involve some unpopular decisions that break established privileges and complacency, resisting easy answers such as seed subsidies, and providing incentives to actors in the seed system. Whether Ghana's seed policy implementation is up to this challenge remains to be seen.

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